Hemorrhoids

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ABSTRACT

Hemorrhoids are normal vascular structures underlying the distal rectal mucosa and anoderm. Symptomatic hemorrhoidal tissues located above the dentate line are referred to as internal hemorrhoids and produce bleeding and prolapse. Thrombosis in external hemorrhoids results in painful swelling. Symptomatic internal hemorrhoids that fail bowel management programs may be amenable to in-office treatment with rubber band ligation or infrared coagulation. Internal hemorrhoids that fail to respond to these measures or complex internal and external hemorrhoidal disease may require a surgical hemorrhoidectomy, either open or closed. A stapled hemorrhoidopexy treats symptomatic internal hemorrhoids and should be employed with care and only after thorough training of the surgeon because of the risk of rare, severe complications. The choice of procedure should be based on the patient's symptoms, the extent of the hemorrhoidal disease, and the experience of the surgeon.

KEYWORDS: Hemorrhoids, thrombosed external hemorrhoids, internal hemorrhoids, rectal bleeding, stapled hemorrhoidopexy

Objectives: On completion of this article, the reader should be able to summarize the evaluation and management of hemorrhoidal disease.

Hemorrhoids are arteriovenous vascular plexuses that surround the distal rectum and anal canal. Hemorrhoids are present in all individuals from birth and become symptomatic when enlarged, inflamed, thrombosed, or prolapsed. The development of symptomatic hemorrhoids is related to a combination of factors including venous engorgement and weakening of the supportive scaffold of connective tissue that supports these vascular structures and the overlying mucosa.[1]

Evaluation of hemorrhoids starts with clarifying an individual's primary symptoms. Generally, patients complain of pain, itching, bleeding, or a mass. Patients with any type of anal symptoms usually ascribe their symptoms to "hemorrhoids." It is important to decipher whether the symptoms are related to hemorrhoids or some other anorectal pathology. Symptoms from hemorrhoids are related to the location of the enlarged hemorrhoidal tissue relative to the dentate line. Internal hemorrhoids are located proximal to the dentate line and usually associated with painless bleeding. Sharp pain occurring with bowel movements is most likely due to an associated fissure. Enlarged internal hemorrhoids may also prolapse, causing symptoms of pruritus ani or fecal soiling. Severe constant pain is rare with internal hemorrhoids and may occur with gangrenous prolapsed hemorrhoids. Internal hemorrhoids are generally described according to the classification published by Banov et al.[2] Symptomatic internal hemorrhoids that do not prolapse are classified as first degree. Second-degree hemorrhoids prolapse and spontaneously reduce.

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Third-degree hemorrhoids require manual reduction of the prolapsed tissue. Fourth-degree hemorrhoids are not reducible.

Hemorrhoids located distal to the dentate line are external hemorrhoids. These are usually asymptomatic unless they become thrombosed. The thrombosed external hemorrhoids are associated with perianal swelling and constant pain. Patients may complain of nonthrombosed, swollen external hemorrhoids or residual enlarged skin tags because of interference with hygiene or appearance.

EXAMINATION

Evaluation of a patient with perianal complaints starts with visual inspection of the perianal skin. This may show skin tags, a thrombosed external hemorrhoid, a perianal abscess, or an external fistula opening. Sometimes a thrombosed external hemorrhoid may be difficult to distinguish from a small perianal abscess. The thrombosed external hemorrhoids have a characteristic bluish color from the clot underlying the anoderm. Prolapsed internal hemorrhoids are distinguished from external hemorrhoids in that the internal hemorrhoids are covered with mucosa and the external hemorrhoids are covered with anoderm. If an anal fissure is suspected based on the patient's complaint of pain with bowel movements, the anal verge should be carefully examined with gentle bilateral retraction at the anal verge before attempting a digital rectal examination. Internal hemorrhoids are not palpable on digital rectal examination. Hypertrophied anal papillae may be identified as smooth palpable masses. These may become enlarged enough to prolapse. Anoscopy is performed to assess for redundant rectal mucosa and to evaluate the extent of hemorrhoidal enlargement. Proctoscopy may be performed in addition to anoscopy to evaluate the more proximal rectum. The presence of enlarged hemorrhoids does not preclude the need to exclude more proximal causes for rectal bleeding. Any patient who reports bleeding per rectum or is found to be anemic and does not have findings suggestive of hemorrhoidal bleeding on anoscopy or proctoscopy should be referred for colonoscopy. In addition, any individual whose bleeding or anemia persists or recurs after treatment for hemorrhoids should be referred for colonoscopy.

The treatment strategy for hemorrhoids should be based on the patient's symptoms. The first step in any treatment strategy is to optimize bowel habits with a bowel management program. This usually consists of increased dietary fiber and increased oral liquid intake.[3] Individuals may also benefit from stool softeners such as docusate sodium. The majority of patients presenting with symptomatic hemorrhoids improve with a bowel management program alone.[4] When patients have persistent symptoms despite having regular soft bowel movements, further intervention is warranted. The treatment options for symptomatic hemorrhoids include nonoperative and operative therapy.

RUBBER BAND LIGATION

A common office treatment for internal hemorrhoids is rubber band ligation. This involves placing a rubber band around a portion of redundant rectal mucosa. A variety of instruments for applying a rubber band to the rectal mucosa have been described. The main difference among the rubber band applicators is whether an instrument is used to grasp the mucosa and pull the tissue into the rubber band applicator or whether the applicator is attached to a suction device and the tissue is sucked into the applicator. There have been no reported differences in effectiveness for the various rubber band application devices, and the use is based on the surgeon's preference. Some advocate ligating only one or two hemorrhoidal bundles at a time to limit a patient's discomfort following the procedure.[5] Others have reported success when three rubber bands are placed at a time.[6–8] If symptoms persist following a single treatment, this procedure may be safely repeated after an interval of ~4 to 6 weeks.

The most important technical point is that the rubber band should be placed at least 1 cm proximal to the dentate line. Rubber band placement too close to the dentate line may result in severe pain. The pain is usually immediate, and the problem can be corrected by removing the rubber band. This is easier said than done. The rubber band must be cut to be removed, and the mucosa is likely to bleed following the removal of the rubber band. Bleeding that is more than minimal is best treated with suture ligation. Minor symptoms following rubber band ligation such as limited bleeding and thrombosed external hemorrhoids may occur in 5% or less of individuals. Significant bleeding has been reported to occur in 1 to 2%. There have been a few case reports of pelvic sepsis occurring after rubber band ligation.[9] In a review of septic complications following treatment for hemorrhoids, McCloud et al found that the mortality from pelvic sepsis following rubber band ligation was ~30%.[10] Individuals who are immunocompromised may be at increased risk for septic complications. Patients should be cautioned regarding symptoms of fever, increased perianal pain, or new onset of urinary retention following the procedure. Any of these symptoms warrants urgent evaluation.

Following rubber band ligation, significant improvement in symptoms may be seen in 80 to 90% of individuals. Symptomatic improvement often persists with long-term follow-up. Steinberg and colleagues reported that 89% of patients considered their symptoms resolved or satisfactorily improved on long-term (mean 4.8 years) follow-up survey.[11] Corman et al reported

improved symptoms in 80% of individuals after an average of 5 years following treatment.[12]

SCLEROTHERAPY

Sclerotherapy is one of the oldest reported treatments for hemorrhoids, dating back to 1869. Various agents have been described as sclerosant agents. Sclerosant agents currently used are 5% phenol in almond or vegetable oil or sodium tetradecyl sulfate, a sclerosant that is approved by the Food and Drug Administration only for treating small varicose veins of the lower extremities (Sotradecol, Elkins-Sinn, Cherry Hill, NJ). The sclerosis mechanism of action is fibrosis of the submucosa, thereby obliterating the redundant tissue. Injection is performed at the apex of a hemorrhoidal bundle; 0.5 to 2 mL of 1% Sotradecol or 1 to 3 mL of 5% phenol in oil solution is slowly injected just cephalad to the internal hemorrhoid bundle.[13] The technique is facilitated by the use of a long needle such as a spinal needle that reaches through the anoscope. A raised wheal helps to confirm proper depth of injection. The most frequently reported complication of sclerotherapy is sloughing of the overlying tissue. This may be caused by too superficial an injection of sclerosant, too much solution injected into one area, or repeated sclerotherapy performed too soon after a previous treatment session. Other less common reported complications include local abscess formation. Transient bacteremia has been reported in 8% of individuals following sclerotherapy, and antibiotic prophylaxis should be considered for individuals at increased risk.[14] Other rare complications include prostatic abscess, retroperitoneal sepsis, and necrotizing fasciitis.[9] Severe anaphylaxis following administration of Sotradecol is reported on the product labeling. Studies evaluating the efficacy of sclerotherapy have shown it to be effective only in the short term, with most patients developing recurrent symptoms.

INFRARED COAGULATION

Infrared coagulation is a technique that utilizes infrared light to create thrombosis and scarring of the hemorrhoidal tissue. An infrared device (Redfield Corporation, Rochelle Park, NJ) consists of a light generator and a long probe that facilitates treatment through an anoscope. A disposable, plastic sheath is placed over the probe and the apex of an internal hemorrhoidal bundle is treated with three to five 1- to 1.5-second applications of the infrared light. After each firing of the device, a 3-mm circular eschar can be identified on the treated tissue. Over the subsequent days, the underlying tissue thromboses and may slough. This technique is particularly useful for treating small hemorrhoidal tissue just proximal to the dentate line that is not amenable to rubber band ligation. Treatment of tissue at least 1 cm proximal to the dentate line does not require anesthetic. Treatment just above or below the dentate line requires local anesthetic. Infrared coagulation has been associated with only occasional minor bleeding and discomfort. Two prospective studies have reported success rates of 67 to 96% following treatment with infrared coagulation in patients with first- or second-degree hemorrhoids.[15,16]

Two meta-analyses comparing various treatment methods for hemorrhoids found that rubber band ligation was more effective than sclerotherapy or infrared coagulation. Rubber band ligation is associated with a higher likelihood of pain.[17,18] A prospective, randomized crossover trial comparing infrared coagulation and rubber band ligation reported an increased frequency of mild pain and over-the-counter analgesic use with rubber band ligation. Rubber band ligation was also associated with more frequent minor bleeding within 24 hours after treatment. When a combination of infrared coagulation and rubber band ligation was used, 97% of patients had satisfactory resolution of symptoms at 1 month follow-up. There was no preference among patients for one treatment modality over the other.[19]

TREATMENT OF THROMBOSED EXTERNAL HEMORRHOIDS

Patients who present with acute thrombosed external hemorrhoids may be treated with oral analgesia, stool softeners, and warm sitz baths. The soaking in warm water may help alleviate the pain by decreasing the anal sphincter tone. Symptoms gradually resolve over 7 days. In a prospective, randomized trial, Perrottti et al demonstrated that topical 0.3% nifedipine and 1.5% lidocaine ointment twice daily resulted in faster resolution of pain than lidocaine alone.[20] Alternative treatments include incision of the overlying skin and evacuating the clot or excision of the thrombosis. The concern with incision and clot evacuation alone is subsequent bleeding and clot reaccumulation.[20]

Jongen et al reported 340 office-based excisions of thrombosed external hemorrhoids. All procedures were performed using 1% mepivacaine. The hemorrhoid was excised starting perianally and dissected into the anal canal, continuing to the dentate line. The wounds were left open to heal by secondary intention. Postprocedure complications included one (0.3%) episode of postoperative bleeding that was treated under local anesthetic and seven (2.1%) individuals who developed a fistula or abscess. After a mean follow-up of 17 months, 66% of patients were symptom free. Persistent symptoms included pruritus ani (21.1%), pain (9.4%), bleeding (5.4%), and residual skin tags (8.1%).[21] Cavcic et al reported a prospective randomized trial comparing topical nitroglycerine alone, incision, and excision in the treatment of perianal thrombosis. During the first 4 days

after treatment, pain was reduced with excision compared with topical nitroglycerine or incision. Topical nitroglycerine alone was more effective for pain reduction than incision. At 1 year follow-up, the number of patients with recurrent symptoms was significantly lower in the excision group. The authors concluded that excision is the optimal treatment for thrombosed external hemorrhoids.[22]

SURGICAL HEMORRHOIDECTOMY

Although numerous variations of operative techniques for the treatment of hemorrhoids have been described, most hemorrhoidectomies performed today may be categorized into one of two approaches. In the "closed" technique, also referred to as the Ferguson hemorrhoidectomy, the mucosa is reapproximated with a running absorbable suture.[23] In the "open" or Milligan-Morgan technique, the mucosa is not reapproximated.[24] These procedures may be done with the patient in the prone, lithotomy, or left lateral decubitus position, based on the surgeon's preference and cooperation from the anesthesiologist. They may be performed under general, regional, or local anesthesia with or without intravenous sedation. Intraoperative fluids should be limited to no more than 500 mL to help decrease the likelihood of urinary retention.

Patients are instructed to take a cleansing enema (Fleet® 240 mL; CB Fleet Co., Lynchburg, VA) before arriving for the procedure. There are varying practices regarding the use of prophylactic antibiotics in average-risk individuals. Prophylactic antibiotics should be given for patients at increased risk because of immunosuppression or relevant cardiac disease. When performing the procedure using local anesthesia with intravenous sedation, 0.25% bupivacaine is injected into the right and left lateral quadrants at the lateral border of the external sphincter muscle. Additional passes of the needle anteriorly and posteriorly are performed to create a field block in the distribution of the pudendal nerve. Additional local anesthetic may be needed to ensure analgesia in the anterior and posterior midline. A total of 20 mL of local anesthetic is usually sufficient to obtain adequate analgesia.

The anal canal is inspected and the prominent hemorrhoidal bundles are identified. Not all individuals have hemorrhoids in the standard distribution of right posterior, right anterior, and left lateral positions. Although many authors report routinely performing three-quadrant hemorrhoidectomy, excision of one or two areas is often sufficient to eliminate a patient's symptoms.[25,26] The extent of tissue excised should be dictated by the patient's symptoms and the extent of hemorrhoidal disease. It is important not to remove too much tissue. Adequate bridges of mucosa and anoderm must be left interposed between the suture lines. It is best to start with the largest hemorrhoidal bundle. The hemorrhoidal tissue is grasped with a curved clamp and the apex of the hemorrhoidal tissue is ligated with a 3-0 absorbable suture. The suture is left in situ with the needle attached for use later. The skin at the distal border of the hemorrhoids is incised with scissors, and with careful dissection, a plane between the hemorrhoidal tissue and the underlying internal sphincter muscle is identified. With gentle spreading of the scissors, the hemorrhoidal tissue may be separated completely along the entire length of the internal sphincter muscle. Identifying the white, transversely oriented internal sphincter muscle fibers is important to avoid injury to this muscle, which may lead to compromised continence postoperatively. The mucosa and underlying hemorrhoidal tissue are then excised using electrocautery.

The outline of the resected tissue often resembles an hourglass with the narrowest points at the proximal and distal apices and at the dentate line. The dentate line is the most important area in which to avoid resecting too much tissue and creating an anal stricture. The mucosa is then reapproximated by running the suture that was originally placed at the proximal apex of the hemorrhoidal bundle. Proximal to the dentate line, interlocking the sutures may be helpful for hemostasis. As the cut edges are reapproximated, attention should be paid to make sure that the dentate line is realigned. Imprecise alignment may result in mucosal ectropion and a resulting "wet anus." Additional hemorrhoidal bundles may be excised using the same technique. The importance of not excising too much tissue to avoid stricture cannot be overemphasized. The ability to insert a medium to large Hill-Ferguson retractor into the anal canal after all cut edges have been approximated ensures that adequate tissues remains to avoid a stricture. The suture line should be checked for hemostasis and additional ligatures placed as needed. Residual external skin tags separate from the site of hemorrhoid excision may be excised sharply or using electrocautery. Excising the redundant skin and leaving the wound to heal by secondary intention gives a better cosmetic result. Suture reapproximation of the skin beyond the anal verge may create a new, albeit smaller, skin tag. All excised tissue should be sent for histologic evaluation. Occasionally, unrecognized neoplasia is identified in a hemorrhoidectomy specimen. External gauze dressing held in place with mesh undergarments is an appropriate dressing. Packing of the anal canal is unnecessary and may be uncomfortable for patients. Any concerns about hemostasis should be addressed with additional suture ligation.

The open technique is identical to that just described up to the point of reapproximating the mucosa. In the open technique the wound is left open and hemostasis is achieved with electrocautery. Five prospective, randomized studies comparing the open and closed

techniques have produced inconsistent results. Three trials showed no difference in postoperative pain.[27–29] One trial showed increased and one showed decreased pain with the open technique.[30,31] One study identified increased urinary retention and anal stenosis with the closed technique.[30]

Four separate prospective randomized controlled studies comparing the LigaSure™ (Valleylab, Boulder, CO) device with standard operative technique using electrocautery have been reported. All studies reported significantly decreased operative times with the LigaSure™ device, although the time differences were only 4 to 10 minutes.[32–35] Two studies reported decreased postoperative pain and one reported decreased postoperative analgesia requirement with the use of the LigaSure™ device.[33–35] There were no reported differences in postoperative complications or patients' satisfaction.

The most common early complications following surgical hemorrhoidectomy are bleeding and urinary retention (Table 1). Factors thought to contribute to postoperative urinary retention include severity of hemorrhoidal disease, opioid usage, and increased use of intraoperative intravenous fluids.[36–38] Bleday et al reported minor bleeding that did not require any intervention in 6% of individuals following hemorrhoidectomy.[4] This bleeding usually occurred within the first 3 days after surgery. Delayed postoperative hemorrhage has been reported to occur between 7 to 16 days postoperatively. In an analysis of factors that may contribute to postoperative hemorrhage, Chen et al found that males were more likely than females to experience postoperative bleeding. Individual surgeons were also associated with an increased risk of bleeding. No specific differences in technique, type of suture used, aseptic preparation, and use of antibiotics were identified as risk factors for bleeding.[39]

Other less common but problematic complications following surgical hemorrhoidectomy include anal stricture and mucosal ectropion. Anal stenosis is likely to occur after too extensive excision of circumferential hemorrhoids. When treating patients with circumferential hemorrhoids, it is preferable to leave enlarged hemorrhoidal tissue behind and accept the possible need for additional treatment rather than risk causing an anal stricture. The primary treatment for an anal stricture complicating a hemorrhoidectomy is based on the severity of the stricture. Patients with only slight narrowing of the anal canal may be treated with one or two episodes of anal dilation. More severe strictures are treated with a skin advancement flap from the lateral perianal skin. A full-thickness flap of skin in a V-Y or house configuration is mobilized and advanced into the anal canal to the level of the dentate line.[40] Success rates for this technique are ~90%.[41]

Table 1 Complications following Hemorrhoidectomy

Complication	
Urinary retention	2–36%[4,64]
Urinary tract infection	3.3%[4,64]
Hemorrhage	0.03–6%[4,39,64]
Fecal impaction	2.4%[4]
Anal stenosis	0–6%[64,65]
Anal incontinence	0–12%[4,64]
Anal fistula	1%[40]

Mucosal ectropion results from misalignment of the dentate line at the time of hemorrhoidectomy. The moist mucosa extending to or beyond the anal verge causes symptoms of pruritus ani and skin irritation. Mucosal ectropion may be corrected by excising the problematic area of mucosa and transverse suturing of the distal cut edge of the rectal mucosa to the proximal internal sphincter muscle. If a stricture is present, an anoplasty as described earlier may be performed.[40]

The surgical hemorrhoidectomy procedure is notorious for the degree of postoperative pain. This is due to the exquisite sensitivity of the anoderm and perianal skin. Spasm of the internal anal sphincter may also contribute to postoperative pain. Standard postoperative pain management includes oral analgesics including opiate or nonsteroidal medications or a combination of both. Avoiding constipation is crucial, and patients should be started on a bowel management program immediately after surgery. Individual surgeons have their own preference for bowel management programs. I start patients on docusate sodium twice daily and have the patients use oral magnesium hydroxide (Milk of Magnesia) if there has been no bowel movement within 48 hours of surgery.

Postoperative metronidazole both oral and topically has been found to decrease postoperative pain.[42,43] This has not been confirmed in another prospective randomized trial.[44] Strategies to ameliorate pain by decreasing the resting anal sphincter tone include the use of topical nitroglycerine. Hwang et al[45] demonstrated decreased pain with 0.2% nitroglycerine. In a similar study, topical 0.2% nitroglycerine did not significantly decrease postoperative pain. In addition, headache was a complaint in 8 of 19 patients.[46] A subsequent study from the same institution demonstrated decreased postoperative hemorrhoid pain with topical 2% diltiazem ointment.[47] Chiu et al reported decreased posthemorrhoidectomy pain with transcutaneous electrical nerve stimulation. The mechanism of action is thought to be release of nitric oxide in response to local stimulation.[48]

STAPLED HEMORRHOIDOPEXY

The most important advance in decreased postoperative pain following treatment for hemorrhoids was the

introduction of the stapled hemorrhoidopexy procedure. In 1990 Allegra reported the use of a circular stapler for hemorrhoidectomy.[49] This technique involved excising the hemorrhoidal tissue just proximal to the dentate line. The result was iatrogenic mucosal ectropion and anal pain. Subsequently, Longo introduced the concept of hemorrhoidopexy, which involved placing a staple line 5 to 6 cm above the dentate line to elevate the rectal mucosa.[50] This technique specifically did not involve the excision of hemorrhoidal tissue just proximal to the dentate line. Longo described the anopexy as "not a modification of stapled hemorrhoidectomy but the antithetical concept and procedure."[51]

The stapled hemorrhoidopexy, also known as "the procedure for prolapsing hemorrhoids (PPH)," is performed using a specialized circular stapler (the Proximate TM HCS Hemorrhoidal Circular Stapler PPH0, Ethicon Endo-Surgery, Cincinnati, OH) that has evolved from the circular endoluminal bowel stapler. A specially designed circular anoscope is inserted to reduce prolapsing anoderm and to allow placement of a circumferential polypropylene suture 4 cm proximal to the dentate line into the mucosa and submucosa. Deploying the stapler too close to the dentate line may result in increased postoperative pain.[52] In females, a digital vaginal examination is performed to confirm that the posterior vaginal wall is not incorporated into the purse string suture. The purse string suture is tightened around the shaft of the stapler. The free ends of the suture are threaded through lateral channels in the stapler housing. The stapler is closed and advanced into the anal canal as traction is placed on the purse string site. When correct positioning is confirmed, the stapler is closed and fired. The staple line is visually inspected, and any residual bleeding site is oversewn with 3-0 polyglycolic acid sutures. The excision of anal skin tags at the time of hemorrhoidopexy may increase the postoperative pain and therefore diminish the relative benefit of this technique.

The main advantage of stapled hemorrhoidopexy is decreased postoperative pain. Several prospective randomized trials have demonstrated that hemorrhoidopexy is as safe and effective as standard hemorrhoidectomy and is associated with decreased postoperative pain (Table 2).[53–59,66] Senagore et al reported the results of a multicentered, prospective, randomized study comparing stapled hemorrhoidopexy and standard excisional hemorrhoidectomy. Adverse events were reported in 36% of the hemorrhoidopexy groups and 48.1% of the hemorrhoidectomy group. Although these complication rates are higher than those in other reported series, they include symptoms of constipation, dysuria, and pruritus that may not have been included in other series. As in earlier series, there was less pain with the stapled hemorrhoidopexy compared with the surgical hemorrhoidectomy within the first week following surgery. Long-term outcomes were similar in both groups. No significant long-term complications occurred in the hemorrhoidopexy group.[53]

Peng et al reported a prospective randomized study comparing rubber band ligation with stapled hemorrhoidopexy.[8] Minor complications occurred in 20% of the individuals undergoing PPH and were similar to those previously reported. There were no complications in the rubber band ligation group. There was no difference in continence, patients' satisfaction, or quality of life. Stapled hemorrhoidopexy was associated with increased pain at 2 week follow-up. Rubber band ligation was associated with an increased incidence of recurrent bleeding at 2 week follow-up (17/25 rubber band ligation versus 8/30 stapled hemorrhoidopexy, $p = 0.002$). Rubber band ligation and stapled hemorrhoidopexy were equally effective in controlling

Table 2 Long-Term Follow-up of Stapled Hemorrhoidopexy versus Excisional Hemorrhoidectomy

Author	Year	*N*	Duration of Follow-up	Patients with Persistent or Recurrent Symptoms		Complications	
				Stapled	Excision	Stapled	Excision
Kairaluoma[57]	2003	60	6 weeks	15 (50%) NS	15 (50%)	4 (13%) NS	1 (3%)
Hetzer[56]	2002	40	1 year	1 NS	1	3 (15%) NS	5 (25%)
Ortiz[66]	2002	55	15 months	7 (26%) Symptoms of recurrent prolapse $p = 0.004$	0	10 (37%) NS	12 (43%)
Cheetham[59]	2003	31	6 months	9 (64%) NS	5 (31%)	8 (53%) NS	2 (13%)
Senagore[53]	2004	117	1 year	2 (2.6%) $p = 0.01$	11 (13.9%)	28 (36.%) NS	38 (48%)

NS, not significant.

symptomatic prolapse, with 16% and 17% of patients in the rubber band ligation and stapled hemorrhoidopexy groups reporting persistent prolapse at 2 months follow-up.

Brusciano et al reported a series of reoperations following failed or complicated stapled hemorrhoidopexy. The most common indications for reinterventions were persistent anal pain and postoperative bleeding caused by recurrent hemorrhoids, retained staples, and anal fissures. Most patients with severe pain after stapled hemorrhoidopexy had retained staples and were treated with staple removal. Staple removal, excisional hemorrhoidectomy, and lateral internal sphincterotomy were the most frequently performed operations.[60] Rare severe adverse consequences following stapled hemorrhoidopexy reported in other studies include perianal pain, fecal urgency, rectovaginal fistula, intra-abdominal hemorrhage, and pelvic and retroperitoneal sepsis.[9,10,61–63]

CONCLUSIONS

Hemorrhoids are normal vascular structures underlying the distal rectal mucosa and anoderm. Symptoms occur when this vascular plexus becomes enlarged. The most common factors predisposing to symptomatic hemorrhoids are constipation and less frequently diarrhea. The most common symptoms of hemorrhoids are bleeding and prolapse, which are most commonly attributed to internal hemorrhoids. Thrombosis in external hemorrhoids results in painful swelling. The majority of individuals with symptomatic hemorrhoids improve with changes in diets and bowel habits. Symptomatic internal hemorrhoids that fail bowel management programs may be amenable to in-office treatment with rubber band ligation or infrared coagulation. Stapled hemorrhoidopexy is a technique that has gained an ardent following among many surgeons. This technique should be employed with care and only after thorough training of the surgeon because of the risk of rare, severe complications. The choice of procedure should be based on the patient's symptoms, the extent of the hemorrhoidal disease, and the experience of the surgeon.

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